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Improvement of patient compliance with the use of Posaconazole in a BMT unit

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Background: Posaconazole is given prophylactically because of prolonged neutropenia and the risk of systemic fungal infections. Posaconazole usage increased in a private hospital Bone Marrow Transplant Unit (BMT) following a Candida parapsilosis outbreak in the Gauteng region. The ward pharmacist noticed low Posaconazole compliance.

Posaconazole is an oral formulation. Patients have severe mucositis, diarrheoa, nausea, vomiting and/or no gastric absorption. Fatty meals improve absorption. Taste is a problem and patients refused the medication. Patients preparing for theater miss oral doses.In a pilot study with 8 non-compliant patients, 5 patients [62,5%] cultured C parapsilosis

Methods & Materials: During January and February 2013 the ward pharmacist recorded the compliance of patients within the BMTU. Patients using Posaconazole for longer than 1 week were included in the study.

The number of doses missed was compared to the number of doses that should have been taken by the patient and converted into a compliance percentage. Patients are compliant when Posaconazole was taken more than 90% of the time and non-compliant when they were more than 10% non-compliant.

Change was implemented and the compliance was monitored from July 2013 to September 2013.

Changes made to improve patient compliance:

- Change dosing regimen QID to TDS
- Only AML and ALLO transplant patients
- Anti-fungal treatment changed when patient is non-compliant
- Anti-fungal treatment changed in ICU setting
- Compliance monitored by pharmacist
- Training by pharmacist for nursing staff on
  - o Dosing
  - o Absorption with food in collaboration with dietitians
  - o Medication interactions

The results from the two periods were compared.

Results: N=28 for Jan-Feb 2013.
-18/28 patients showed less than 90% compliance
-64.3% non-compliant
-Non-compliant patients took medication 14.1% of the time.
N=26 for July to September 2013.
-2/26 patients showed less than 90% compliance
-7.6% non-compliant
-Non-compliant patients took medication 77.5% of the time.

Conclusion: During 2012 43 patients were diagnosed with Candida parapsilosis candidaemia compared to 11 patients diagnosed from Jan to Sep 2013.

Improving compliance to posaconazole is critical for effective prophylaxis. Pharmacists can play an important role in supporting improved compliance.

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Antibiotic stewardship programs: Overcoming barriers to successful implementation

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Background: Antibiotic stewardship programs (ASP) encourage appropriate antibiotic use including avoidance of unnecessarily broad therapy. However, hospitals differ in antibiotic use and opportunities for intervention. Bryn Mawr Hospital, a 335-bed community teaching hospital, implemented an ASP three years ago. Use of six designated antibiotics (days of Rx / thousand patient days; US$ antibiotic costs) subsequently decreased significantly:

2010 (baseline) DOT / 1,000 pt days = 49.2 $466,978
2011 29.3 $217,447
2012 28.0 $207,586
2013 25.5 $164,600

However, the program did encounter a number of barriers to successful implementation.

Methods & Materials: After two years, a review of ASP effectiveness was conducted emphasizing problems overcome and remaining hinderances to success. Interviews with groups supporting ASP (pharmacy, information technology, hospitalists, ICU staff, emergency department, infection control, microbiology laboratory) yielded information impacting on cases reviewed, attitudes about ASP, interventions necessary, days of antibiotic therapy (DOT) per 1000 patient-days, cost reduction, influence on future behavior, and impact on institutional antibiograms.

Results: Enough time for case review and interventions (phone calls, face-to-face discussions) was a limiting factor. Monday-Wednesday-Friday morning rounds were adequate and a compromise with personnel availability. Use of the electronic medical record (EMR) allowed "rounding from a distance" and was key to effectiveness. However, antibiotic restriction or "point-of-service" feedback for computer order entry was very limited. Physician accessibility and "buy-in" to ASP varied — education was easier with larger more homogeneous groups (e.g., hospitalists) while residents rotating through were difficult to access. Support from an infection control program helped extend ASP teachings. Measuring effectiveness was helped by pharmacy computer programs, but required careful definition of parameters. Changes in infection prevalence (e.g., *C. difficile*) or antibiotic resistance rates are likely only to be evident over several years.

Conclusion: Keys to ASP effectiveness include a dedicated team with regular rounding schedule and availability of EMR to increase timeliness. Education is critical but difficult to target and time-consuming. A multidisciplinary focus and establishment of program definitions and goals at the outset can avoid many problems and allow better determination of effectiveness. Hospitals considering ASP and/or implementing an EMR can take advantage of our findings.

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